METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) & VANCOMYCIN INTERMEDIATE STAPHYLOCOCCUS AUREUS (VISA): INFECTION CONTROL & MANAGEMENT

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

- Standard and contact precautions apply to patients with MRSA or VISA colonisation or infection.
- Patients colonised or infected with MRSA or VISA are flagged with a risk code on the PM system.
- Effective hand washing is essential in preventing transmission.
- A child colonised or infected with MRSA or VISA must be admitted to a single room on any ward. The door of the room must remain closed.
- Patients will be screened as directed by Infection Control and TB Surveillance and according to NSW Health policy (PD2007_084).
- Currently treatment options are limited.
- Infection Control must be consulted prior to attempting to document clearance of a patient, and clearance swabs should only be sent when the patient is NOT on topical or systemic anti-MRSA/VISA therapy.
- Clearance of a patient with MRSA or VISA colonisation requires three consecutive clear specimens from:
  - the original site of isolation; (if original wound is fully healed swabbing is not needed) (no need to collect repeated blood cultures) plus
  - surface swabs from groin (peri-anal region) and nose.
- Clearance swabs must be taken at least 72 hours apart.

Approved by:	SCHN Policy, Procedure & Guideline Committee	Original endorsed by HCQC May 2008
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Team Leader:	Clinical Nurse Consultant	**Area/Dept**: Infection Control

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CHANGE SUMMARY

- MoH are reviewing their guidelines. No changes in this version but will be reviewed when MoH guidelines are released. 1 year review only

READ ACKNOWLEDGEMENT

- All clinical staff caring for patients with MRSA &/or VISA colonisation or infection should read and acknowledge this document.

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Introduction

MRSA

Staphylococcus aureus (*S. aureus*) is a bacterium which readily grows on human skin and mucous membranes. Methicillin-resistant *S. aureus* (MRSA) is a strain of *S. aureus* which is resistant to the semi-synthetic penicillins (i.e. methicillin, flucloxacillin) and all other beta-lactam antibiotics (including other penicillins, cephalosporins, and carbapenems). Many MRSA strains are also resistant to other classes of antibiotics including aminoglycosides, macrolides, and quinolones ("multiresistant MRSA"). Methicillin or multi – resistant *S.aureus* is neither more infectious nor more virulent than methicillin-susceptible *S. aureus*, however it is much more difficult to treat.

Detection of MRSA within hospitals and long term care facilities has increased dramatically in the last two decades. Once MRSA becomes endemic within a hospital, it is rarely eliminated and may eventually account for 5-50% of all nosocomial Staphylococcal infections. Concern about MRSA is related to the potential for nosocomial transmission and the limited number of antibiotics available to treat the infections it causes.

Infection occurs when MRSA enters a body site and multiplies in tissue causing clinical manifestations of disease. This is usually evident by fever, a rise in the white blood cell count, or purulent drainage from a wound or body cavity (e.g. boils, septicaemia, osteomyelitis).

Colonisation occurs when a patient has MRSA in or on a body site but has no clinical signs or symptoms of disease. A person colonised with MRSA may be a temporary or a longer term carrier of MRSA and certain carriers may be particularly heavy shedders of MRSA (e.g., patients with dermatitis or burns). Colonised and infected patients are the major reservoirs of MRSA. Colonisation often occurs in the nares (nose), axillae (arm pits), chronic wounds and perineum or around gastrostomy and/or tracheostomy sites. Patients at risk for MRSA colonisation are generally patients who may have prolonged and frequent hospitalisations, chronic wounds, or received treatment with multiple antibiotics.

The distinction between colonisation and infection is a clinical one.

VISA

MRSA with reduced susceptibility to Vancomycin has been recently documented, usually in patients who are failing Vancomycin therapy for MRSA infections. This organism is known as vancomycin-intermediate *S. aureus* (VISA), first recognised in 2002 in both Japan and the USA. Cases are now being seen in Australia. Precautions used to prevent MRSA transmission are likely to be adequate to also prevent VISA transmission.

Infections caused by Vancomycin-Intermediate *S. aureus* (VISA) underscore the need for infection control programs to prevent the emergence and spread of antimicrobial resistant microorganisms in the healthcare setting, as well as prudent use of important antimicrobials such as vancomycin. Sub-therapeutic vancomycin dosing is strongly associated with the subsequent isolation of VISA strains.

Command and Control

Responsibility for implementation of this policy is the direct responsibility of appropriate clinical line managers caring for affected patients.

- The clinical line managers will consult with the Infection Control Team regarding appropriate patient placement and infection control procedures.
- Where there is a dispute between clinical line managers and infection control / microbiology or if there is no policy on a particular issue or the policy needs updating then there needs to be further discussion between clinical line managers, infection control, microbiology and the Director of Clinical Operations to develop a consensus agreement based on best evidence. If a dispute arises about policy it is to be referred to the Chief Executive for resolution.
- MRSA / VISA infections are not mandated as a reportable infection to Public Health Units.
- More information: NSW MoH intranet page on Multi-resistant Organisms: http://www0.health.nsw.gov.au/quality/hai/tp_organism.asp
- A Reportable Incident Brief (RIB) will be sent to NSW Department of Health on any potential media interests or problems. This is currently the responsibility of the Executive Assistant to the CE.
- Microbiologist or Infection Control Practitioner will notify the Director of Clinical Operations of identification of any known clusters of *disease or organism.*
- The Director of Clinical Operations will in turn notify the Chief Executive.
- A report on management of any new disease or organism clusters will be made to the next Infection Control Committee meeting. The Infection Control Committee minutes will be sent to the Senior Management Group for information.

Transmission

Colonised and infected patients are the major reservoirs of MRSA or VISA. MRSA and VISA have been isolated from environmental surfaces including floors, sinks, work areas, tourniquets used for blood drawing, and blood pressure cuffs. Although MRSA and VISA have been isolated from environmental surfaces (e.g., floors, medical equipment), such surfaces are not the most likely source of transmission. However, environmental surfaces should be disinfected routinely to reduce the bacterial load.

Risk of Acquisition

Those who are at risk of infection and/or colonisation with MRSA or VISA include:

- Patients with several underlying health conditions (such as diabetes and kidney disease),
- Those with invasive devices, recent hospitalisations,
- Patients with recent exposure to vancomycin and other antimicrobial agents,
- Long term patients and those admitted to ICU are at a higher risk of being colonised from an unidentified patient with MRSA or VISA.
- Those patients whose immune systems are suppressed either by disease or by treatment therapy.

Screening

Patients

As directed by Infection Control and TB Surveillance and according to the NSW Health Department Policy Directive (PD2007_084) "Infection Control Policy: Prevention and Management of Multi-Resistant Organisms."

Environmental

As directed by Infection Control and TB Surveillance.

Treatment

MRSA

A major problem with MRSA is that it is generally resistant to many oral antibiotics and it may be necessary to give parenteral vancomycin to treat infections. Permanent eradication of colonisation with MRSA is extremely difficult to achieve. Topical or parenteral antibiotics may achieve temporary eradication but re-colonisation is usual.

VISA

Currently treatment options are severely limited. Most clinical VISA isolates are recovered from patients who failed Vancomycin therapy and these isolates are usually resistant to other commonly used antibiotics.

The best regimens for treating VISA infections have yet to be determined and various combinations of antimicrobial agents are usually required. Antibiotic agents should be selected in consultation with an Infectious Diseases physician or the microbiologist and on the basis of laboratory susceptibility testing.

Clearance

- Infection Control must be consulted prior to attempting to document clearance of a patient.
- Clearance of a patient with MRSA or VISA colonisation should not be attempted for at least 12 months after the initial MRSA positive specimen was collected.
- Clearance of a patient with MRSA or VISA colonisation requires three consecutive clear specimens from:
  - the original site of isolation (no need to collect repeated blood cultures),
  - any other active wound, or device exit site
  - the groin (peri-anal region), and
  - the nose
- Swabs must be taken at least 72 hours apart. Clearance swabs should only be sent when the patient is NOT on anti-MRSA or anti-VISA therapy (e.g. Vancomycin, Rifampicin and Fusidic Acid, Mupirocin).
- Swabs are to be taken prior to a bath or any hygiene procedure.
- If any site shows the presence of MRSA or VISA, re-swabbing should not occur for at least 3 months.
- Pathology request are to be labelled "**MRSA Clearance only** "or "**VISA Clearance only**".
- Children with positive blood cultures require surface swabs (nose, perineum, any active wounds or device exit sites) for routine clearance but do not require follow up blood culture.

Surveillance

Infection Control Measures

Standard and contact precautions apply.
Refer to Infection Control: Isolation Practice Guidelines
All known children with **MRSA** are flagged with a risk code of "**M**" on the PM system.
All known children with **VISA** are flagged with a risk code of "**S**" on the PM system.

Further control strategies include:

- Restriction of the use of Vancomycin and other broad spectrum antibiotics such as cephalosporins and quinolones,
- Optimal dosing of Vancomycin, with therapeutic drug monitoring to ensure that therapeutic levels are achieved within the first few days of therapy,

- The use of proper diagnostic techniques to minimise prolonged empirical therapy,
- Minimise use of temporary venous catheters or invasive devices,
- Encourage physicians to seek advice from an Infectious Disease physician for the treatment of *S. aureus* infections.

Management

Patients

Admission

- A child colonised or infected with MRSA or VISA must be admitted to a single room on any ward. The door of the room must remain closed.
- The room and all equipment in contact with the patient's environment must be cleaned as per cleaning policy.
- Children with the same MRSA strains can share a room. Confirmation must be sought from Infection Control prior to cohorting patients.
- Standard and contact precautions apply.
- Hands must be washed with 2% Chlorhexidine solution on entering and when leaving the child's room inside the room.
- After careful hand washing, hands should be thoroughly dried. Alcohol rub should be applied outside the room and allowed to dry.
- A child with MRSA or VISA is not allowed to stay at Ronald McDonald House.
- The child should not visit any of the dining areas within the hospital or the Starlight Room.
- The child should not visit other inpatients.
- The child can only attend the schoolroom or Therapy Departments rooms after negotiation with Infection Control.
- Movement to other areas must be undertaken only when absolutely necessary.
- The child can go to the outside areas of the hospital but must take the most direct route.

Emergency Department

- A child colonised or infected with MRSA or VISA must be admitted to a single room and the door kept closed.
- Standard and contact precautions apply.
- The room must be cleaned as per cleaning policy.

Outpatient Department

- A child colonised or infected with MRSA or VISA must be admitted to a single room and the door kept closed.
- Standard and contact precautions apply.
- The room and all equipment in contact with the patient's environment must be cleaned as per policy.

Medical Imaging

- The Medical Imaging Department must be informed of the child's MRSA or VISA status by the transferring area prior to transfer.
- Standard and contact precautions apply.
- The room and all equipment in contact with the patient's environment must be cleaned as per cleaning policy.

Operating Theatres

- The operating theatres must be informed of the child's MRSA or VISA status by the transferring area prior to transfer.
- A child colonised or infected with MRSA or VISA should be scheduled on the theatre list where appropriate (last on the theatre list if possible) and does not compromise the child's care.
- Standard and contact precautions apply.
- Staff must wear long sleeved cuffed gowns and gloves when in direct contact with the patient.
- Recovery should occur in an isolated area if possible.
- The room and all equipment in contact with the patient must be cleaned as per policy.

Visitors and siblings

Visitors must follow standard and contact precautions. Visitors must thoroughly wash their hands inside the room with 2% Chlorhexidine solution after patient contact and when leaving the room. After careful hand washing, hands should be thoroughly dried and alcohol rub applied and allowed to dry outside the room. Visitors must not visit other children in the ward or use the communal playroom.

Equipment and Environment

- The room must be thoroughly cleaned daily as per Cleaning Policy.
- Equipment used should be dedicated for the patient's use only and should stay in the room or be cleaned thoroughly on removal.
- Normal cutlery and crockery can be used; no special washing up procedure is required.
- No special handling of linen is required.

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Isolation Information Fact Sheet

Methicillin-Resistant Staphylococcus Aureus (MRSA)

Vancomycin Intermediate Staphylococcus Aureus (VISA)

PATIENT / PARENT

- The child is to be nursed in a single room or cohorted with other children with the same strain of MRSA or VISA.
- Hands must be washed on entering the child's room.
- Hands must be washed on leaving the child's room.
- Alcoholic hand rub or gel must be applied outside the child's room.
- Standard and Contact Precautions apply.
- Door to the room to remain closed whilst the child is in the room.
- Movement from the room is restricted to outdoor areas or main corridor for discharge or transfer within the hospital.
- The child with MRSA or VISA cannot use the Starlight Room.
- The child with MRSA or VISA cannot visit any of the dining areas within the hospital.
- The child with MRSA or VISA cannot visit other inpatients.
- When bathed in the ward bathroom, the bath must be cleaned thoroughly.
- The child with MRSA or VISA can use the communal toilet if continent.
- Restrictions do not apply when the child is not within the hospital.

For further information please contact the, Infection Control - Page No's: 6131 or 6655 or Ext's 52578 or 52534.

Negotiation can be made on individual cases with Infection Control; NUM of the ward with the parents and child. This agreement must be documented in the child's notes.